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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(54) Title: PAPER WITH IMPROVED SURFACE PROPERTIES AND METHOD OF MAKING THE SAME (57) Abstract Paper with improved surface properties, especially printability and coating properties. The invention is characterized in that the paper comprises a surface layer consisting of highly beaten paper pulp, fine material or fibres separated from highly beaten paper pulp and/or fine material, possibly containing fibres, from white water, in an amount of at maximum 10 g/m ² , preferably at maximum 5 g/m ² .		

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Paper with improved surface properties and method
of making the same

This invention relates to a paper with improved surface properties, especially printability and coating properties. The invention also relates to a method of making such a paper.

When a paper has been made in a papermaking machine, it is in most cases necessary to treat the paper so as to render it applicable to the purpose in question. Such a treatment can be surface sizing for making the fibre material hydrophobic, or coating, which implies that a pigment dispersed in a binding agent is applied on the paper web. The treatment is very expensive, and it is therefore of interest to take measures, which can reduce the investments in this respect.

The primary object of the present invention is to bring about a uniform, dense, dustless and printable surface on the paper and paperboard and also to obtain an improvement in the bending stiffness without the disadvantages involved with the present state of art.

At the making of printing paper and paperboard it is important, that the product has a uniform and printable surface. The surface is desired to have low dusting tendency and low fibre rise. It is, besides, of great economic value that the product has good rigidity. For single-layer sheets and surface layers in paperboard these properties are achieved to-day by a high energy investment at beating and by admixture of short-fibre pulp. In addition, glazing and in many cases surface sizing and coating are required for obtaining the desired surface quality. Increased beating and admixture of short-fibre pulp result in increased drainage resistance and thereby reduced production. Glazing always implies reduced bending stiffness.

The disadvantages at conventional art are overcome by the present invention.

According to the invention, a paper is produced which comprises a surface layer of highly beaten paper pulp, fine material separated from highly beaten paper pulp and/or fine material from white water in an amount of at maximum 10 g/m^2 , preferably at maximum 5 g/m^2 . The material is applied on each side or only one side of a wet sheet already formed. The material can be applied on the wet paper web by means of a head box located separately at the papermaking machine or by means of spray tins.

According to a particularly suitable embodiment, the surface layer consists of a cellulose material with a beating degree exceeding 30°SR , preferably exceeding 60°SR .

This thin layer has the capacity of together with the base layer to form a smooth and strong surface with improved printability and coating properties compared to the base material. The advantage of this method compared to the present art is, that the base material requires less beating and smaller amounts of short-fibre pulps, which render dewatering difficult, in order to achieve the same surface finish and surface bonding strength. The advantage thereof is that for paperboard the bending stiffness is improved due to a greater thickness and due to the increase in the modulus of elasticity of the surfaces.

The invention is not restricted to the applying methods set forth, but can be varied within the scope of the invention idea.

Claims

1. A paper with improved surface properties, especially printability and coating properties, characterized in that it comprises a surface layer consisting of highly beaten paper pulp, fine material or fibres separated from highly beaten paper pulp and/or fine material, possibly containing fibres, from white water, in an amount of at maximum 10 g/m^2 , preferably at maximum 5 g/m^2 .
2. A paper as defined in claim 1, characterized in that the surface layer consists of a cellulose material with a beating degree exceeding 30°SR , preferably exceeding 60°SR .
3. A method at the making of a paper with improved surface properties, especially printability and coating properties, characterized in that a wet paper web already formed is provided with a surface layer consisting of highly beaten paper pulp, fine material or fibres separated from highly beaten paper pulp and/or fine material, possibly containing fibres, from white water, in an amount of at maximum 10 g/m^2 , preferably at maximum 5 g/m^2 , and the web thereafter is treated in a manner previously known per se.
4. A method as defined in claim 3, characterized in that the surface layer is applied in the form of a cellulose material with a beating degree exceeding 30°SR , preferably exceeding 60°SR .
5. A method as defined in claim 3 or 4, characterized in that the cellulose material is applied through a head box provided separately at the papermaking machine.
6. A method as defined in claim 3 or 4, characterized in that the cellulose material is applied by means of spray tins.

INTERNATIONAL SEARCH REPORT

International Application No PCT/SE84/00428

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) *		
According to International Patent Classification (IPC) or to both National Classification and IPC 4		
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Classification System	Classification Symbols	
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Documentation Searched other than Minimum Documentation to the extent that such Documents are included in the Fields Searched *		
SE, NO, DK, FI classes as above		
III. DOCUMENTS CONSIDERED TO BE RELEVANT *		
Category *	Citation of Document, 11 with indication, where appropriate, of the relevant passages 12	Relevant to Claim No. 13
X	US, A, 1 924 573 (BROWN COMPANY) 29 August 1933 See claims 1-5	1
A	SE, B, 7014457-1 (W G LOUDEN) 9 June 1975 & DE, 2052936 GB, 1335561 US, 3839144	1-2
<p>* Special categories of cited documents: 10</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"A" document member of the same patent family</p>		
IV. CERTIFICATION		
Date of the Actual Completion of the International Search		Date of Mailing of this International Search Report
1985-03-13		1985-03-18
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